

By Rob Kadel

Data-Driven Decision Making— Not Just a Buzz Word

Not all learning management systems are created equal.
Look for an LMS that offers real-time reporting, differentiation,
and the ability to group students by learning styles.



In education, data-driven decision making is a buzz word that has come to mean collecting absolutely as much data as possible on everything from attendance to zero tolerance, and then having absolutely no idea what to do with it. Most educational organizations with a plethora of data usually call in a data miner, or evaluator, to make some sense of it all. Evaluators spend weeks, months, sometimes years trying to find the nugget buried in all that data. Often, however, by the time they find that golden piece of information, the students have moved on, the grant has expired, or the program has been replaced with some new, amazing intervention.

What educators need is real-time information—data that can help them answer questions while their students are still in their classrooms. What's more, the data and analyses must be individualized. In the past, it has been enough for educators to focus on the “average” students and to improve their “average” achievement. Today, we have tools that can help us understand each student, even those at the margins who are either far ahead of the curve or far behind it.

How do we manage such data and learn from it? Enter the learning management system, also known as the curriculum management system, a type of software or webware that basically manages content and student data. For ease of explanation, I'm going to refer to all such systems as learning management systems.

Learning management systems abound, ranging from modular pre-packaged tools to open source systems. The questions to consider are: What can you—the teacher, administrator, or technology coordinator—get out of such a system, and what kinds of tools should you look for?

Most systems, from Blackboard to CompassLearning Odyssey to Pearson's Project Tapestry and doz-

ens of others, allow users to collect individualized information on each student and make that data accessible whenever and wherever the instructor needs it.

But not all learning management systems are created equal. Each will collect slightly different kinds of data and summarize them in different ways, spitting out different reports. For example, one system may show you a list of vocabulary quizzes and the percentage correct that each student scored on each quiz. This may show up as a PDF report, making it easy for printing or sharing with other instructors. Another system may show you the same kinds of vocabulary quizzes, the average scores for your entire class, and a comparison of your class' average to the averages of other classes at the same grade level. This might come as an interactive Web report wherein clicking on an average score for one quiz opens up a new window showing how each individual student scored on the quiz.

To understand the potential of learning management systems, let's start with the question we ask when writing a paper or creating a presentation: “Who is my audience?” In other words, who will be using the system, and what will they need to get out of it? This is a question that is best not answered by a single individual. The assistant superintendent for information technology cannot fully anticipate what teachers will need, just as teachers cannot anticipate all of administration's needs. All users of the system are the “audience,” and it needs to be flexible enough to meet all their

informational needs. Here are three functions to consider.

Real-time reporting. If you are an educator who is dedicated to driving instructional decisions through the use of data, then the data you use cannot be a month or a semester or a year old. For each student, you must consider where the student is right now, what it will take for that student to reach curriculum standards, and what types of exercises are required for different students to reach different goals.

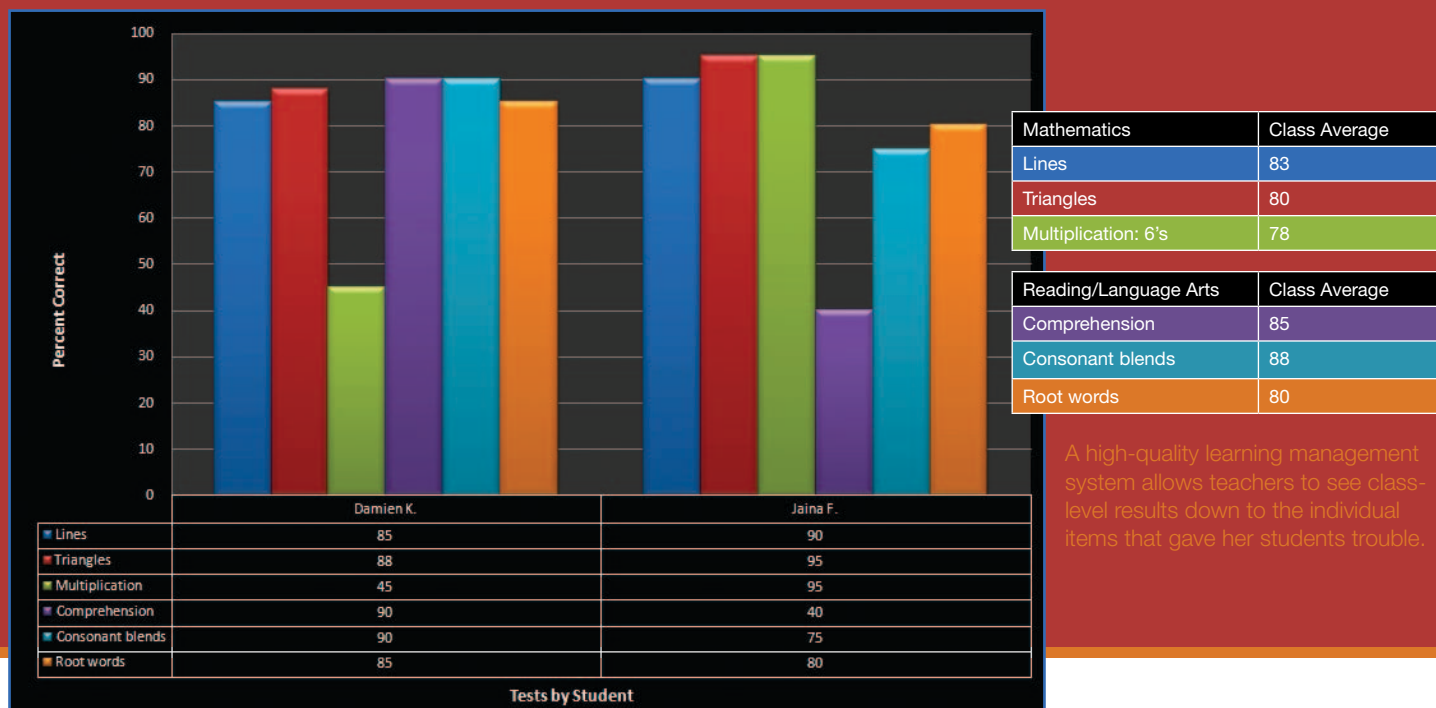
Let's look at a couple of hypothetical examples. Our first student is Damien, a 9-year-old third grader at an elementary school in a city center that serves some 700 students in grades K–5. Damien excels at reading, but he has been having trouble with mathematics, particularly his multiplication tables. The district curriculum states that Damien should have learned (among other things) lines, triangles, and his multiplication tables through the sixes by the middle of the school year.

Our second student is Jaina, a 9-year-old in Damien's class. Jaina's math quiz scores have been quite good. But she struggles with reading, particularly comprehension. The district curriculum states that by the middle of the third grade, Jaina should be able to (among other things) recall the main idea of a story that has been read to her aloud, use three-letter consonant blends, and understand some root words.

Damien and Jaina's teacher, Ms. Walsh, wants to know what areas need additional focus and, ideally, what type of learning might reach them the best. So she turns to the

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Comparison Chart



district's learning management system. There, she sees a list of curriculum standards and her class' average scores out of 100 points on each.

To understand how her students are performing on these, Ms. Walsh would simply click on one of the average scores to drill down to individual scores. There she could see a chart, and she could select the students whose scores she wants to see. (Or there might be a checkbox that asks if she wants to see only those students who have scored below the class average.) With a few mouse clicks, Ms. Walsh pulls up a chart to review the data (see Comparison Chart).

By double-clicking on one of the colored bars in the comparison chart, Ms. Walsh might get an item analysis—that is, a list of the quiz questions that

Damien or Jaina got wrong. In short, a high-quality learning management system should allow Ms. Walsh to get from the class level down to the individual items that gave her students trouble. A district curriculum administrator might want to drill down from district averages to school averages to classroom averages to determine which teachers might need some additional help with their classes.

Differentiation. Ms. Walsh should also consider the types of content standards that are causing different students trouble. For example, Damien is performing admirably in mathematics, except for multiplication tables. Perhaps he is not a rote learner but does well with the problem-based learning introduced around lines and triangles.

Meanwhile, Jaina is performing well with consonant blends and root words but not comprehension. She can practice with flash cards until the proverbial cows come home, but that won't help her learn to draw out the main point of a story. Jaina needs help, for example, learning to create mental images when listening to a story.

Now, I know what you're thinking: Who the heck has the time to do all that? Educators are often (if not always) faced with more demands than they have time for. Lack of time is perhaps the main reason that true differentiation of instruction has yet to be widely applied.

Fortunately, technology is giving us the tools to achieve these goals in far less time than was once required. For example, some learning management systems now have the ability to alert the instructor when a student isn't making the mark. With multiple practice quizzes, assessments, and comprehension exercises to administer to 30 or 40 students in a class, it's not easy to keep up with who is slipping behind in skill areas. But if the learning management system is given a

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“rule,” or algorithm, to send an e-mail to the instructor when Damien—or any student—has missed more than half the quiz questions on his times tables, then Ms. Walsh is made instantly aware that Damien needs some remediation or perhaps a new style of exercises for learning.

Grouping for learning styles. A high-quality learning management system will also allow for grouping students who learn in particular ways and for assigning them lessons that match their learning styles. Clayton Christensen, Curtis W. Johnson, and Michael B. Horn, in their 2008 book *Disrupting Class: How Disruptive Innovation Will Change the Way the World Learns*, base their work on Howard Gardner’s theory of multiple intelligences and point out that students have different learning styles,

such as spatial ability or logical-mathematical ability. Prior to the onset of technology in education, it would have been practically impossible for teachers to meet each student’s learning goals according to that student’s individual learning style.

The beauty of the learning management system is that it has the potential to provide different kinds of learning exercises aimed at different learning styles. And the teacher can assign exercises and lessons to different students based on each individual’s data-driven identified need.

Not every learning management system has the same functions and the same characteristics. And what I’ve touched on here barely scratches the surface of features that systems will be offering in coming years. Nonetheless, the system that truly provides data-driven decision making will need to:

- Cull the data collected
- Display results
- Identify meaningful patterns
- Alert educators to learner challenges
- Provide curricula
- Suggest exercises that can meet each student’s needs

As the educator, I invite you to keep these kinds of tasks in the back of your mind (or, heck, on a checklist right in front of you), and search for tools in your learning management system that will make data-driven decision making an everyday practice rather than just a buzz word.



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